

# Chapter 3

## Cold Climate Considerations

This chapter lists and explains cold climate considerations that should be addressed prior to BMP selection and installation. This chapter also discusses the potential for additional maintenance requirements during late fall and winter months in New Hampshire due to seasonal occurrences such as leaf fall, road salting and sanding, freezing, and vegetative die-off.

### 3.1. Concerns

Many innovative technologies have been designed and installed in other warmer regions of the country. Items to be considered when selecting a BMP to be installed in New Hampshire are as follows:

- **Frost heaves** – potential to damage structural features of BMP such as pipes or concrete infrastructure
- **Pipe freezing** - when freezing occurs there is a reduction in treatment as well as risk of flooding
- **Reduced biological activity** - for BMPs that rely on biological mechanisms to reduce nutrients and organic matter. Cold temperatures reduce microbial activity
- **Reduced settling velocities** - when water cools, its viscosity increases, which reduces particle velocity by up to 50% and makes it more difficult for particles to settle out
- **Reduced infiltration** - due to freezing of soils and filter media
- **Increased runoff volumes during snowmelt** - if the ground remains frozen, snowmelt cannot infiltrate the soil and instead will contribute to the amount of runoff present
- **Access difficulties in ice and snow** - access points frozen shut, difficulty locating BMPs under snow load

### 3.2. Maintenance Requirements

Maintenance requirements of certain BMPs may increase during winter months due to increased loading and debris. Pollutant loading typically increases due to leaf fall, plowing, sanding, salting, and accumulation of materials in snow piles. Cold climate pollutants include:

- Sand
- Salt
- PAHs - Polycyclic Aromatic Hydrocarbons emitted from fireplaces and inefficient vehicles in winter
- Cyanide - salt additive to prevent clumping

BMPs that use filtration, settling, or trapping to remove contaminants require frequent inspection and maintenance. Regular maintenance of BMPs is suggested just prior to the first snowfall or road sanding, after the last snowfall, and during spring snowmelt to ensure proper treatment of runoff.